

WHAT IS CLAIMED:

1. A golf ball comprising:
 - a center core component formed from a first composition comprising a cis-1,4 polybutadiene and a sulfur curing agent;
 - at least one core layer disposed about said center core component thereby forming an intermediate ball, said core layer formed from a second composition comprising a cis-1,4 polybutadiene and a peroxide curing agent; and
 - at least one cover layer disposed about said core layer thereby forming said golf ball.
2. The golf ball of claim 1 wherein said center core component has a diameter of from about 0.35 inches to about 1.20 inches.
3. The golf ball of claim 2 wherein said center core component is free of zinc diacrylate.
4. The golf ball of claim 1 wherein said core layer has a diameter of from about 1.450 inches to about 1.650 inches.
5. The golf ball of claim 1 wherein said golf ball has a Shore D cover hardness of from about 35 to about 90.
6. The golf ball of claim 1 wherein said polybutadiene utilized in at least one of said first composition and said second composition has a cis-1,4 content greater than 90 percent.
7. The golf ball of claim 1 wherein said center core component has a specific gravity of from about 1.0 to about 1.8.
8. The golf ball of claim 1 wherein said center core component exhibits a specific gravity of less than 1.0.

9. The golf ball of claim 1 wherein said center core component comprises microballoons, cellular foam materials, or combinations thereof.

10. The golf ball of claim 1 wherein said sulfur curing agent comprises at least one of N-oxydiethylene 2-benzothiazole sulfenamide, N,N-di-orthotolyguanidine, bismuth dimethyldithiocarbamate, N-cyclohexyl 2-benzothiazole sulfenamide, N,N-diphenylguanidine or combinations thereof.

11. The golf ball of claim 1 wherein said first composition also comprises an accelerator.

12. The golf ball of claim 11 wherein said accelerator comprises at least one of mercaptobenzothiazoles, sulfenamides, dithiocarbamates, thiuram sulfides, guanidines, thioureas, xanthates, dithiophosphates, aldehyde-amines, dibenzothiadyl disulfide, N,N'-diccyclohexyl-2-benzothiadylsulfenamide, 5 hexamethylenetetramine, mercaptbenzothiazole, tetramethylthiuram disulfide, tetraethylthiuram disulfide, tetrabutylthiuram disulfide or combinations thereof.

13. The golf ball of claim 1 wherein said peroxide curing agent comprises at least one of dicumyl peroxide; 2,5-dimethyl-2,5-di(*t*-butylperoxy) hexane; 2,5-dimethyl-2,5-di(*t*-butylperoxy) hexyne; 2,5-dimethyl-2,5-di(benzoylperoxy) hexane; 2,2'-bis(*t*-butylperoxy)-di-iso-propylbenzene; 1,1-bis(*t*- 5 butylperoxy)-3,3,5-trimethyl cyclohexane; *n*-butyl 4,4-bis(*t*-butyl-peroxy) valerate; *t*-butyl perbenzoate; benzoyl peroxide; *t*-butyl peroxy-3,5,5 trimethylhexanoate or combinations thereof.

14. A golf ball comprising:

a generally spherical inner core component formed from a first composition including (i) a cis-1, 4 polybutadiene having a cis-1, 4 content greater than 90 percent, (ii) a sulfur curing agent comprising at least one of N-oxydiethylene 2-benzothiazole sulfenamide, N,N-di-orthotolyguanidine, bismuth 5

dimethyldithiocarbamate, N-cyclohexyl 2-benzothiazole sulfenamide, N,N-diphenylguanidine or combinations thereof, and (iii) an accelerator comprising at least one of mercaptobenzothiazoles, sulfenamides, dithiocarbamates, thiuram sulfides, guanidines, thioureas, xanthates, dithiophosphates, aldehyde-amines, dibenzothiadyl disulfide, N,N'-diccyclohexyl-2-benzothiadylsulfenamide, hexamethylenetetramine, mercaptobenzothiazole, tetramethylthiuram disulfide, tetraethylthiuram disulfide, tetrabutylthiuram disulfide or combinations thereof;

at least one core layer disposed on said inner core component, said core layer formed from a second composition including (i) a cis-1,4 polybutadiene having a cis-1,4 content greater than 90 percent, and (ii) a peroxide curing agent comprising at least one of dicumyl peroxide; 2,5-dimethyl-2,5-di(*t*-butylperoxy) hexane; 2,5-dimethyl-2,5-di(*t*-butylperoxy) hexyne; 2,5-dimethyl-2,5-di(benzoylperoxy) hexane; 2,2'-bis(*t*-butylperoxy)-di-isopropylbenzene; 1,1-bis(*t*-butylperoxy)-3,3,5-trimethyl cyclohexane; *n*-butyl 4,4-bis(*t*-butyl-peroxy) valerate; *t*-butyl perbenzoate; benzoyl peroxide; *n*-butyl 4,4'-bis(butylperoxy) valerate; di-*t*-butyl peroxide; 2,5-di-(*t*-butylperoxy)-2,5 dimethyl hexane; or combinations thereof; and

at least one cover layer disposed on said core layer.

15. The golf ball of claim 14 wherein said cis-1,4 polybutadiene of one of said first composition and said second composition has a cis-1,4 content greater than 96 percent.

16. The golf ball of claim 14 wherein at least one of said inner core component, said core layer, and said cover layer comprises a heavy weight filler comprising at least one of graphite, precipitated hydrated silica, clay, talc, asbestos, glass aramid fibers, mica, calcium metasilicate, barium sulfate, zinc sulfide silicates, diatomaceous earth, calcium carbonate, magnesium carbonate, titanium, tungsten, aluminum, bismuth, nickel, molybdenum, iron, copper, brass, boron, bronze, cobalt, beryllium, zinc, tin, zinc oxide, iron oxide, aluminum oxide, titanium oxide, magnesium oxide, zirconium oxide, zinc stearate, calcium stearate, barium stearate, lithium stearate, magnesium stearate, carbon black,

natural bitumen, cotton flock, cellulose flock, leather fiber, or combinations thereof.

17. A golf ball comprising:

a centrally disposed inner core component comprising a cis-1,4 polybutadiene and a sulfur curing agent, said inner core component having a Shore A hardness of from about 60 to about 90;

5 at least one core layer disposed on said inner core component, said core layer having a generally uniform thickness and comprising a cis-1,4 polybutadiene and a peroxide curing agent, said core layer having a Shore D hardness of from about 40 to about 60; and

at least one cover layer disposed on said core layer.

18. The golf ball of claim 17 wherein at least one of said polybutadienes in said inner core component and said core layer have a cis-1,4 content greater than 90 percent.

19. The golf ball of claim 17 wherein at least one of said inner core component and said core layer comprises a blend of at least two polybutadienes.

20. The golf ball of claim 17 wherein said inner core component is free of zinc diacrylate.